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WILSON, ROBERT W	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/833,868	ARRAKOSKI ET AL.	
	Examiner	Art Unit	
	ROBERT W. WILSON	2419	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 20-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 & 20-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 3-4, 5-6, 8-9, 11-13, 15-17, 20-24, 26-30, & 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haas (U.S. Patent No.: 6,304,556) in view of Liu (U.S. Patent No.: 6,980,537)

Referring to claim 1, Haas teaches: a system (Fig 3) comprising: a first-tier mesh formed of a plurality of first tier nodes (28 or first tier has a plurality of nodes per Fig 3) each of the first-tier nodes of the plurality of first tier nodes configured to communicate data within the first tier with at least selected other of the first-tier nodes (routing provided as peer to peer per col. 8 line 37 to col. 9 line 17) at least one of the first tier nodes forming a sink node (CH 3 per Fig 3 or sink node)

At least a second-tier mesh formed of a plurality of second tier nodes each of the second-tier nodes of the plurality of second-tier nodes configured to communicate data within the second tier with at least selected other of the second-tier nodes (CH1-CH4 in 32 per Fig 3 are second tier nodes in a mesh which are capable of communicating)

a second-tier sink node further capable of communicating with the first-tier sink node of said first-tier sink mesh (CH3 in 32 or second tier-sink node is capable of communicating with CH3 in 28 or first tier sink node per Fig 3)

Wherein the system is configured to provide radio communication of data therein (Nodes in Figure 3 are mobile nodes so wireless access is provided) and the first-tier nodes of the first-tier mesh operate and communicate based on a first tier-mesh operational characteristic and wherein the second-tier nodes of said second-tier mesh operate and communicate based on a second-tier mesh operation characteristics (The first tier nodes operate and communicate based on a first tier-mesh operational characteristic of being a node whereas the second tier operate and communicate based on a second-tier mesh operation of being cluster heads per col. 8 lines 37 to 65)

Wherein the first-tier and the second-tier mesh operate and communicate according to different mesh architectures based on at least one of a point-to-point mesh architecture, a pre-configured-mesh architecture and an-hoc-mesh architecture (The tier-1 network or first tier per Fig 3 is preconfigure so that a single node is the head and the other nodes talk to the head and the tier-2 network is preconfigured so that all of the nodes are cluster heads per Fig 3)

Haas does not expressly call for: first tier mesh operational characteristic and second tier operation characteristics being different.

Liu teaches: first tier mesh operational characteristic and second tier operation characteristics being different (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add first tier mesh operational characteristic and second tier operation characteristics being different of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

In addition Haas teaches:
Regarding claim 21, wherein at least one tier-node and said first-tier mesh and at least one second tier node of said second tier mesh are not collocated the at least one first-tier node located distance from the at least one second tier node located distant from the at least one second tier node configured to communicate with the at least selected other of the first-tier nodes and the at least one second-tier node located distant form the at least one first-tier node capable of communicating with the at least selected other of the second tier node (The Ad hoc network of Fig 3 is not co-located)

Referring to claim 5, Haas teaches: a system (Fig 3) comprising: a first-tier mesh formed of a plurality of first tier nodes each of the first-tier nodes of the plurality of first tier nodes configured to communicate data within the first tier with at least one other of the first-tier nodes (28 or first tier mesh has a plurality of nodes capable of communicating per Fig 3)

At least a second-tier mesh formed of a plurality of second tier nodes each of the second-tier nodes of the plurality of second-tier nodes configured to communicate data within the second tier with at least selected other of the second-tier nodes (CH1-4 in 32 per Fig 3 are second tier nodes capable of communicating) at least one of the second-tier nodes forming a second-tier sink node (Each of nodes CH1-4 in Fig 32 are sink nodes) the second-tier sink node further capable of communicating with the first-tier sink node of said first-tier sink mesh (Each of the Sink nodes CH1-CH4 in 32 are capable of communicating with their counterpart sink node CH1 to CH4 respectively per Fig 3)

Wherein the first-tier mesh comprises an ad-hoc mesh which exhibits an ad-hoc configuration and an ad-hoc number of first-tier nodes (first tier per Fig 3 is ad-hoc per col. 8 line 39 which inherently contains an ad-hoc number of first tier nodes) and

Wherein the system is configured to provide radio communication of data therein (Nodes in Figure 3 are mobile nodes so wireless access is provided) and the first-tier nodes of the first-tier mesh operate and communicate based on a first tier-mesh operational characteristic and wherein the second-tier nodes of said second-tier mesh operate and communicate based on a second-tier mesh operation characteristics (The first tier nodes are operable pursuant a first tier-mesh operational characteristic of being a node whereas the second tier operate and communicate based on a second-tier mesh operation of being cluster heads per col. 8 lines 37 to 65)

Wherein the second tier mesh operates and communicates according to a mesh architecture that is based on at least one of a point to-point-mesh architecture and a pre-configured architecture (The tier-2 network or second tier mesh is preconfigured so that all of the nodes are cluster heads per Fig 3)

Haas does not expressly call for: first tier mesh operational characteristic and second tier operation characteristics being dissimilar.

Liu teaches: first tier mesh operational characteristic and second tier operation characteristics being dissimilar (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add first tier mesh operational characteristic and second tier operation characteristics being dissimilar of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

Referring to claim 8, Haas teaches: a system (Fig 3) comprising: a first-tier mesh formed of a plurality of first tier nodes (28 or first tier has a plurality of nodes per Fig 3) each of the first-tier nodes of the plurality of first tier nodes configured to communicate
data within the first tier with at least selected other of the first-tier nodes (routing provided as peer to peer per col. 8 line 37 to col. 9 line 17) at least one of the first tier nodes forming a sink node (CH 3 per Fig 3 or sink node)

At least one of the second-tier nodes forming a second-tier sink node (CH1-CH4 in 32 per Fig 3 are second tier nodes) which are configured to communicate with the first-tier sink node of the first-tier mesh(CH1-CH4 in 32 per Fig 3 are second tier nodes in a mesh which are capable of communicating with their respective first tier counter part)

Wherein the system is configured to provide radio communication of data therein (Nodes in Figure 3 are mobile nodes so wireless access is provided) and the first-tier nodes of the first-tier mesh operate and communicate a first tier-mesh operational characteristic and wherein the second-tier nodes of said second-tier mesh operate and communicate a second-tier mesh operational characteristics (The first tier nodes operate and communicate a first tier-mesh operational characteristic of being a node whereas the second tier operate and communicate a second-tier mesh operation of being cluster heads per col. 8 lines 37 to 65)

Wherein the first –tier-mesh operates an communicates according to at least of a point-to-point-mesh architecture and an adhoc-mesh architecture (adhoc per col. 8 line 38)

Hass does not expressly call for: wherein said second tier mesh comprises a pre-configured mesh which exhibits a fixed configuration and a fixed number of second-tier nodes or first tier mesh operational characteristic and second tier operation characteristics being different.

Liu teaches: wherein said second tier mesh comprises a pre-configured mesh which exhibits a fixed configuration and a fixed number of second-tier nodes (col. 14 lines 27 to 61) and first tier mesh operational characteristic and second tier operation characteristics being different (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add a pre-configured mesh which exhibits a fixed configuration and a fixed number of second-tier nodes and first tier mesh operational characteristic and second tier operation characteristics being different of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

Referring to claim 9, the combination of Haas and Liu teach the system of claim 8,

Haas does not expressly call for: wherein the second-tier nodes are stationary.

Liu teaches wherein the second-tier nodes are stationary (Fig 8)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the second-tier nodes are stationary of Liu in place of the ad hoc nodes of the combination of Haas and Liu in order to build a network which can utilize terrestrial interconnections and increase the bandwidth between second tier nodes.

Referring to claim 11, Haas teaches: a system (Fig 3) comprising: a first-tier mesh formed of a plurality of first tier nodes (28 or first tier has a plurality of nodes per Fig 3) each of the first-tier nodes of the plurality of first tier nodes configured to communicate data within the first tier with at least selected other of the first-tier nodes (routing provided as peer to peer per col. 8 line 37 to col. 9 line 17) at least one of the first tier nodes forming a first-tier sink node (CH 3 per Fig 3 or sink node)

At least a second-tier mesh formed of a plurality of second tier nodes each of the second-tier nodes of the plurality of second-tier nodes configured to communicate data within the second tier with at least selected other of the second-tier nodes (CH1-CH4 in 32 per Fig 3 are second tier nodes in a mesh which are capable of communicating) the second-tier sink node further configured to communicate with the first-tier sink node of said first-tier sink mesh (CH3 in 32 or second tier-sink node is capable of communicating with CH3 in 28 or first tier sink node per Fig 3)

Wherein the system is configured to provide radio communication of data therein (Nodes in Figure 3 are mobile nodes so wireless access is provided) and the first-tier nodes of the first-tier mesh operate and communicate based on a first tier-mesh operational characteristic and wherein the second-tier nodes of said second-tier mesh operate and communicate based on a second-tier mesh operation characteristics (The first tier nodes operate and communicate based on first tier-mesh operational characteristic of being a node whereas the second tier operate and communicate based on a second-tier mesh operation of being cluster heads per col. 8 lines 37 to 65)

Wherein the first-tier-mesh and the second-tier mesh operate and communicate according to a different mesh architectures based on at least one of a point-to-point-mesh architecture, a pre-configured-mesh architecture and an ad-hoc-mesh architecture (The tier-1 network or first tier per Fig 3 is preconfigured so that a single node is the head and the other nodes talk to the head and the tier-2 network is preconfigured so that all of the nodes are cluster heads per Fig 3)

Haas does not expressly call for: a third-tier mesh formed of a plurality of third-tier nodes, each of the third-tier nodes of the plurality of third-tier nodes capable of communicating data with at least selected other of the third tier nodes, at least one of the third-tier nodes forming a third tier sink node and first tier mesh operational characteristic and second tier operation characteristics being different

Liu teaches: a third-tier mesh formed of a plurality of third-tier nodes, each of the third-tier nodes of the plurality of third-tier nodes capable of communicating data with at least selected other of the third tier nodes (col. 5 lines 39 to 53 and per col. 14 lines 29 to 61 and per Fig 8) at least one of the third-tier nodes forming a third tier sink node (super node is a third tier sink node col. 5 lines 39 to 53 and per col. 14 lines 29 to 61 and per Fig 8) and first tier mesh operational characteristic and second tier operation characteristics being different (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add third-tier mesh formed of a plurality of third-tier nodes, each of the third-tier nodes of the plurality of third-tier nodes capable of communicating data with at least selected other of the third tier nodes, at least one of the third-tier nodes forming a third tier sink node and first tier mesh operational characteristic and second tier operation characteristics being different of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

Referring to claim 12, the combination of Haas and Liu teach: the system of claim 11 and the first tier nodes of said first-tier mesh operate and communicate based on a first tier mesh operational characteristics where the second tier nodes of said second-tier mesh are operational pursuant to second-tier operational characteristics and Haas teaches a third tier (multiple tier)

Haas does expressly call for: third-tier operational characteristics, respectively, in some part dissimilar (different operational characteristics for each tier per col. 6 lines 41 to 63)

It would have been obvious to add the different operation characteristic of each tier of Liu to the three tiered network of the combination of Liu and Haas in order to insure that the communication between each tier does not interfere.

Referring to claim 13, the combination of Haas and Liu teach: the system of claim 11.

Haas does not expressly call for: wherein said third-tier mesh comprises a point-to-point mesh which exhibits a fixed configuration and fixed number of third tier nodes

Liu teaches: wherein said third-tier mesh comprises a point-to-point mesh which exhibits a fixed configuration and fixed number of third tier nodes (Fig 8)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the third-tier mesh comprises a point-to-point mesh which exhibits a fixed configuration and fixed number of third tier nodes of Liu in place of the third tier nodes of the combination of Haas and Liu in order to utilize a terrestrial backbone which provides for additional bandwidth to be utilized between nodes.

Referring to claim 15, Haas teaches: a system (Fig 3) comprising:

a first-tier mesh formed of a plurality of first tier nodes (28 or first tier has a plurality of nodes per Fig 3) each of the first-tier nodes of the plurality of first tier nodes configured to communicate data within the first tier with at least selected other of the first-tier nodes (routing provided as peer to peer per col. 8 line 37 to col. 9 line 17) at least one of the first tier nodes forming a sink node (CH 3 per Fig 3 or sink node)

At least a second-tier mesh formed of a plurality of second tier nodes each of the second-tier nodes of the plurality of second-tier nodes configured to communicate data within the second tier with at least selected other of the second-tier nodes with at least selected others of the second-tier nodes (CH1-CH4 in 32 per Fig 3 are second tier nodes in a mesh which are capable of communicating)

At least one of the second-tier nodes forming a second tier sink node the second-tier sink node further configured to communicate with the first-tier sink node of said first tier mesh (CH3 in 32 or second tier-sink node is capable of communicating with CH3 in 28 or first tier sink node per Fig 3)

Wherein the at least one of the first-tier node forming the first-tier sink node comprises a first first-tier node forming a first first-tier sink node and at least a second first tier node forming a second first-tier node (CH3 in 28 is s first first-tier node which is a sink and CH2 is a second first tier node which is a sink per Fig 3) wherein the at least one of the second-tier nodes forming the second-tier sink comprises a second-tier node forming a second-tier sink node (CH2 is the second tier node), the first-tier sink node capable of communicating with the first second tier sink

node (Tier nodes are capable of intercommunicating) , the second first-tier sink node configured to communicate with the second second-tier sink node (tier nodes are capable of intercommunicating) and the first and second second-tier sink node respectively are capable of intercommunicating (tier nodes are capable of intercommunicating)

Wherein the system is configured to provide radio communication of data therein (Nodes in Figure 3 are mobile nodes so wireless access is provided) and the first-tier nodes of the first-tier mesh are operate and communicate based on a first tier-mesh operational characteristic and wherein the second-tier nodes of said second-tier mesh operate and communicate based on a second-tier mesh operation characteristics (The first tier nodes operate and communicate based on a first tier-mesh operational characteristic of being a node whereas the second tier operate and communicated based on a second-tier mesh operational characteristic of being cluster heads per col. 8 lines 37 to 65)

Wherein the first-tier-mesh and the second-tier -mesh operate and communicate according to different mesh architectures based on at least one of point-to-point architecture, pre-configured-mesh architecture and an ad-hoc-mesh architecture (The tier-1 network or first tier per Fig 3 is preconfigure so that a single node is the head and the other nodes talk to the head and the tier-2 network is preconfigured so that all of the nodes are cluster heads per Fig 3)

Haas does not expressly call for: first tier mesh operational characteristic and second tier operational topological characteristics being different

Liu teaches: first tier mesh operational characteristic and second tier operational and topological characteristics being different (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add first tier mesh operational characteristic and second tier operational and topological characteristics being different of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

In addition Haas teaches:

Regarding claim 16, further comprising an other of the second-tier nodes of said second-tier mesh positioned between the first second-tier node sink node and a second second-tier sink node communication between the first and second-tier sink nodes effectuated by the way of the other second-tier nodes (There are other second-tier sink nodes in between per Fig 30

Referring to claim 17, the combination of Haas and Liu teaches the system of claim 15.

Haas does not expressly call for: wherein data communicated between the first-tier mesh is communicated at a first data rate wherein data communicated between the second tier nodes of said second tier mesh is communicated at a second data rate the second data rate greater than the first data rate such that data communicated between the first and second first-tier nodes is

communicated more quickly by way of the first and second-tier sink nodes that by way of the first-tier mesh

Liu teaches: wherein data communicated between the first-tier mesh is communicated at a first data rate wherein data communicated between the second tier nodes of said second tier mesh is communicated at a second data rate the second data rate greater than the first data rate such that data communicated between the first and second first-tier nodes is communicated more quickly by way of the first and second-tier sink nodes that by way of the first-tier mesh (first frequency and second frequency in which high frequency rate is on backbone or second tier per Fig 1A col. 6 lines 45 to 54)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the wherein data communicated between the first-tier mesh is communicated at a first data rate wherein data communicated between the second tier nodes of said second tier mesh is communicated at a second data rate the second data rate greater than the first data rate such that data communicated between the first and second first-tier nodes is communicated more quickly by way of the first and second-tier sink nodes that by way of the first-tier mesh of Liu to the first tier and second tier architecture network of the combination of Haas and Liu in order to improve performance by running a faster rate on the backbone than the first tier.

Referring to claim 20, Haas teaches: a method (Fig 3 performs the method) comprising forming a wireless access network providing for communication therein (Fig 3 is a wireless ad hoc network which forms in order to perform communication);

Forming a first-tier mesh of a plurality of first-tier nodes, each of the first-tier nodes capable of communicating data within the first tier with at least selected other of the first tier nodes (Fig 3 shows a first-tier mesh of a plurality of nodes which are a part of an ad-hoc network which forms and the nodes are capable of intercommunicating)

Forming a second-tier mesh of a plurality of second-tier nodes, each of the second tier nodes of the plurality of second-tier nodes capable of communicating data within the second tier with at least selected others of the second-tier nodes (Figure 3 shows an ad-hoc network which forms of second tier nodes with are capable of intercommunicating) at least one of the second tier nodes forming a second-tier sink node further capable of communicating with the first tier sink node of the first-tier mesh formed during said operation of forming the second-tier mesh (CH1-CH4 in 32 per Fig 3 are second tier nodes which are capable of communicating with CH1-CH4 which are their first tier counterparts)

Wherein the system is configured to provide radio communication of data therein (Nodes in Figure 3 are mobile nodes so wireless access is provided) and the first-tier nodes of the first-tier mesh operate and communicated to a first tier-mesh operational characteristic and wherein the second-tier nodes of said second-tier mesh operate and communicate with a second-tier mesh operation characteristics (The first tier nodes are operable pursuant a first tier-mesh operational

characteristic of being a node whereas the second tier are operable pursuant to a second-tier mesh operation of being cluster heads per col. 8 lines 37 to 65)

Wherein the first-tier-mesh and the second-tier -mesh operate and communicate according to different mesh architectures based on at least one of point-to-point architecture, pre-configured-mesh architecture and an ad-hoc-mesh architecture (The tier-1 network or first tier per Fig 3 is preconfigured so that a single node is the head and the other nodes talk to the head and the tier-2 network is preconfigured so that all of the nodes are cluster heads per Fig 3)

Haas does not expressly call for: first tier mesh operational characteristic and second tier operation characteristics being different.

Liu teaches: first tier mesh operational characteristic and second tier operation characteristics being different (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add first tier mesh operational characteristic and second tier operation characteristics being different of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

Referring to claim 22, Haas teaches: an apparatus (Fig 3) comprising: at least one first-tier node (nodes other than CH3 in 28 per Fig 3) wherein the at least one first-tier nodes form a first tier mesh (nodes other than CH3 in 28 per Fig 3 form a mesh), and the apparatus is configured to communicate data within the first tier with at least selected other of the at least one first-tier nodes (CH3 communicates with all of the node in 28 per Fig 3) and communicated data with a second tier sink node of a second-tier network (CH3 per 28 communicates with CH3 per 32 in Fig 3)

Wherein first-tier nodes of the first-tier mesh operate and communicate based on a first tier-mesh operational characteristic and wherein the second-tier nodes of said second-tier mesh operate and communicated based on a second-tier mesh operational characteristics (The first tier nodes are operable pursuant a first tier-mesh operational characteristic of being a node whereas the second tier are operate and communicate base on a second-tier mesh operation of being cluster heads per col. 8 lines 37 to 65)

Wherein the first-tier-mesh and the second-tier -mesh operate and communicate according to different mesh architectures based on at least one of point-to-point architecture, pre-configured-mesh architecture and an ad-hoc-mesh architecture (The tier-1 network or first tier per Fig 3 is preconfigured so that a single node is the head and the other nodes talk to the head and the tier-2 network is preconfigured so that all of the nodes are cluster heads per Fig 3)

Haas does not expressly call for: first tier mesh operational characteristic and second tier operation characteristics being dissimilar.

Liu teaches: first tier mesh operational characteristic and second tier operation characteristics being dissimilar (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add first tier mesh operational characteristic and second tier operation characteristics being dissimilar of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

In addition Haas teaches:
Regarding claim 6, wherein the first-tier nodes comprise mobile nodes configured to move through a selected area (First-tier nodes are ad-hoc mobile which are inherently capable of movement through a selected area)

Regarding claim 23, wherein the first-tier mesh comprises an ad-hoc mesh which exhibits an ad-hoc configuration and an ad-hoc number of the at least one of first-tier nodes (The first tier-mesh is an ad hoc network with an ad-hoc number of at least one first tier nodes per Fig 3)

Referring to claim 3, the combination of Haas and Liu teach: the apparatus of claim 22

Haas does not expressly call for: wherein the first tier-mesh operation characteristic comprise a first frequency band within which communication of data is effectuated wherein the second-tier mesh operational characterisics comprise second frequency bandwidth which communication of data is effectuated, the first freqnecy bandwidht and second frequency bandwidht having at lest a plurality of nonoverlapping portions

Liu teaches: first tier mesh frequency bandwidth and second tier frequency bandwidth being within which communication of data is effectuated the first frequency bandwidth and the second frequency bandwidth having at least plurality of nonoverlapping portions (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to nonoverlapping frequency band of the first and second tier of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

Referring to claim 24, Haas teaches: an apparatus (Figure 3) comprising: at least one second-tier node (CH 1 in 32 per Fig 3) wherein the at least one second-tier node is configured to form a second-tier mesh, and the apparatus is configured to communicate data within the second tier and at least selected other of the at least one second-tier node of a first-tier mesh (CH1-CH4 in 32 per Fig 3 are second tier nodes which are capable of communicating with CH1-CH4 which are their first tier counterparts)

wherein the first-tier nodes of the first-tier mesh operate and communicated based on a first tier-mesh operational characteristic and wherein the second-tier nodes of said second-tier mesh operate and communicated based on a second-tier mesh operation characteristics (The first tier

nodes operate and communicate based on a first tier-mesh operational characteristic of being a node whereas the second tier operate and communicated based on a second-tier mesh operation of being cluster heads per col. 8 lines 37 to 65)

Haas does not expressly call for: first tier mesh operational characteristic and second tier operation characteristics being different.

Liu teaches: first tier mesh operational characteristic and second tier operation characteristics being different (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add first tier mesh operational characteristic and second tier operation characteristics being different of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

Referring to claim 25, Haas and Liu teaches: the apparatus of claim 24.

Haas does not expressly call for: wherein the second-tier mesh comprises a pre-configured mesh which exhibits a fixed configuration and a fixed number of second-tier nodes

Liu teaches: wherein the second-tier mesh comprises a pre-configured mesh which exhibits a fixed configuration and a fixed number of second-tier nodes (Fig 8)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the second-tier mesh comprises a pre-configured mesh which exhibits a fixed configuration and a fixed number of second-tier nodes Liu in place of the ad hoc nodes of the combination of Haas and Liu in order to build a network which can utilize terrestrial interconnections and increase the bandwidth between second tier nodes.

Referring to claim 26, Haas teaches: a apparatus (Fig 3) comprising: at least one first-tier node ,where the at least one first tier nodes form a first-tier mesh (nodes other that CH3 in 28 are first tier nodes which form a mesh)

Means for communicating data within the first tier with at least selected other of at least one first-tier nodes (Fig 3 has nodes which have the capabilities of the nodes in Fig 1 which have transceiver per col. 6 lines 57 or means)

Means for communicating data with a second-tier sink node of a second –tier network (Fig 3 has nodes which have the capabilities of the nodes in Fig 1 which have transceiver per col. 6 lines 57 or means)

wherein the first-tier nodes of the first-tier mesh operate and communicate to a first tier-mesh operational characteristic and wherein the second-tier nodes of said second-tier mesh operate and communicated to a first tier-mesh to a second-tier mesh operational characteristics (The first tier

nodes operate and communicated base on a first tier-mesh operational characteristic of being a node whereas the second tier operate and communicated based on a second-tier mesh operation of being cluster heads per col. 8 lines 37 to 65)

Wherein the first-tier-mesh and the second-tier -mesh operate and communicate according to different mesh architectures based on at least one of point-to-point architecture, pre-configured-mesh architecture and an ad-hoc-mesh architecture (The tier-1 network or first tier per Fig 3 is preconfigured so that a single node is the head and the other nodes talk to the head and the tier-2 network is preconfigured so that all of the nodes are cluster heads per Fig 3)

Haas does not expressly call for: first tier mesh operational characteristic and second tier operation characteristics being dissimilar.

Liu teaches: first tier mesh operational characteristic and second tier operation characteristics being dissimilar (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add first tier mesh operational characteristic and second tier operation characteristics being dissimilar of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

Referring to claim 27, an apparatus (Fig 3) comprising: at least one second-tier node, where the at least one second tier nodes forms a second-tier mesh (node other that CH3 in 32 are second tier nodes which form a mesh)

Means for communicating data within the second tier with at least selected other of at least one second-tier node (Fig 3 has nodes which have the capabilities of the nodes in Fig 1 which have transceiver per col. 6 lines 57 or means)

Means for communicating data with a first-tier sink node of a first-tier mesh (Fig 3 has nodes which have the capabilities of the nodes in Fig 1 which have transceiver per col. 6 lines 57 or means) and the first-tier nodes of the first-tier mesh operate and communicate based on a first tier-mesh operational characteristic and wherein the second-tier nodes of said second-tier mesh operate and communicated based on a second-tier mesh operation characteristics (The first tier nodes operate and communicate based on a first tier-mesh operational characteristic of being a node whereas the second tier operate and communicated based on to a second-tier mesh operation of being cluster heads per col. 8 lines 37 to 65)

Wherein the first-tier-mesh and the second-tier -mesh operate and communicate according to different mesh architectures based on at least one of point-to-point architecture, pre-configured-mesh architecture and an ad-hoc-mesh architecture (The tier-1 network or first tier per Fig 3 is preconfigured so that a single node is the head and the other nodes talk to the head and the tier-2 network is preconfigured so that all of the nodes are cluster heads per Fig 3)

Haas does not expressly call for: first tier mesh operational characteristic and second tier operation characteristics being dissimilar.

Liu teaches: first tier mesh operational characteristic and second tier operation characteristics being dissimilar (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add first tier mesh operational characteristic and second tier operation characteristics being dissimilar of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

Referring to claim 28, Haas teaches: a method (Fig 3 performs the method) comprising:

forming a first-tier mesh using at least one first-tier node (The ad-hoc network in Figure 3 has first tier node which form in a mesh) communicating data with the first tier node with at least selected other of the at least one first-tier nodes (All of the nodes in the first tier can intercommunicate)

Communicating data with a second-tier sink node of a second-tier network (The first tier nodes can communicate data CH 1 to CH 4 in 32 per Fig 3)

wherein the first-tier nodes of the first-tier mesh operate and communicated based on a first tier-mesh operational characteristic and wherein the second-tier nodes of said second-tier mesh operate and communicated based on a second-tier mesh operation characteristics (The first tier nodes operate and communicate based on a first tier-mesh operational characteristic of being a node whereas the second tier operate and communicated based on a second-tier mesh operation of being cluster heads per col. 8 lines 37 to 65)

Wherein the first-tier-mesh and the second-tier -mesh operate and communicate according to different mesh architectures based on at least one of point-to-point architecture, pre-configured-mesh architecture and an ad-hoc-mesh architecture (The tier-1 network or first tier per Fig 3 is preconfigured so that a single node is the head and the other nodes talk to the head and the tier-2 network is preconfigured so that all of the nodes are cluster heads per Fig 3)

Haas does not expressly call for: first tier mesh operational characteristic and second tier operation characteristics being dissimilar.

Liu teaches: first tier mesh operational characteristic and second tier operation characteristics being dissimilar (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add first tier mesh operational characteristic and second tier operation characteristics being dissimilar of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

Referring to claim 30, the combination of Haas and Liu teach: the method of claim28

Haas does not expressly call for: wherein the first tier-mesh operation characteristic comprise a first frequency band within which communication of data is effectuated wherein the second-tier mesh operational characterisics comprise second frequency bandwidth which communication of data is effectuated, the first freqnecy bandwidht and second frequency bandwidht having at lest a plurality of nonoverlapping portions

Liu teaches: first tier mesh frequency bandwidth and second tier frequency bandwidth being within which communication of data is effectuated the first frequency bandwidth and the second frequency bandwidth having at least plurality of nonoverlapping portions (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to nonoverlapping frequency band of the first and second tier of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

In addition Haas teaches:
Regarding claim 32, wherein the first-tier nodes comprise mobile nodes configured to move through a selected area (First-tier nodes are ad-hoc mobile which are inherently capable of movement through a selected area)

Referring to claim 29, Haas teaches a method (Fig 3 performs the method) comprising:

forming a second-tier mesh using at least one second-tier node (The ad-hoc network of Fig 3 forms the second-tier mesh)

communicating data within the second tier with at least selected other of the at least one second-tier node (CH1-CH4 in 32 can all intercommunicate)

and communicating data with a first-tier sink node of a first-tier mesh (CH1 –CH4 in 32 can communicate data with their respective counterpart in the tier-1 network per Fig 3)

wherein the first-tier nodes of the first-tier mesh are operable pursuant to a first tier-mesh operational characteristic and wherein the second-tier nodes of said second-tier mesh are operational pursuant to a second-tier mesh operation characteristics (The first tier nodes are operable pursuant a first tier-mesh operational characteristic of being a node whereas the second tier are operable pursuant to a second-tier mesh operation of being cluster heads per col. 8 lines 37 to 65)

Haas does not expressly call for: first tier mesh operational characteristic and second tier operation characteristics being dissimilar.

Liu teaches: first tier mesh operational characteristic and second tier operation characteristics being dissimilar (tiers utilize different frequencies per col. 6 lines 41 to 62)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add first tier mesh operational characteristic and second tier operation characteristics being dissimilar of Liu to the first tier and second tier of Haas in order to build a system in communications does not interfere.

3. Claims 4, 7, 10, 14, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Haas (U.S. Patent No.: 6,304,556) in view of Liu (U.S. Patent No.:6,980,537) further in view of

Acampora (U.S. Patent No.: 6,751,455)

Referring to claim 4, Haas teaches the system of claim 1 and first tier nodes mesh and second tier nodes mesh and are configured to communicate.

Haas does not expressly call for: at least one first-tier node of said first-tier node and at least one second tier node of said second-tier mesh are co-located the at least one first-tier node co-located with the at least one second-tier node and at least the one second-tier node co-located with the at least first-tier

Acamora teaches: at least one first-tier node of said first-tier node and at least one second tier node of said second-tier mesh are co-located the at least one first-tier node co-located with the at least one second-tier node and at least the one second-tier node co-located with the at least first-tier (network in a home per col. 7 lines 61 or collocated)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add at least one first-tier node of said first-tier node and at least one second tier node of said second-tier mesh are co-located the at least one first-tier node co-located with the at least one second-tier node and at least the one second-tier node co-located with the at least first-tier of Acampora to the first tier and second tier of Haas in order to build a system in a home or business.

Referring to claim 7, the combination of Haas and Liu teaches: the apparatus of claim 5

The combination of Haas and Liu do not expressly call for: wherein the communication data is effectuated pursuant to non line of sight (NLOS) communication technique

Acampora teaches: wherein the communication data is effectuated pursuant to non line of sight (NLOS) communication technique (col. 2 lines 21 to 25)

It would have been obvious to add the short range radio capability of Acampora to the nodes of the combination of Haas and Liu in order to allow communication without line of sight restrictions.

Referring to claim 10, the combination of Haas and Liu teaches: the system of claim 9.

The combination of Haas and Liu do not expressly call for: wherein the communication data is effectuated pursuant to non line of sight (NLOS) communication technique

Acampora teaches: wherein the communication data is effectuated pursuant to non line of sight (NLOS) communication technique (col. 2 lines 21 to 25)

It would have been obvious to add the short range radio capability of Acampora to the nodes of the combination of Haas and Liu in order to allow communication without line of sight restrictions.

Referring to claim 14, the combination of Haas and Liu teaches: the system of claim 13.

The combination of Haas and Liu do not expressly call for: wherein the communication data is effectuated pursuant to non line of sight (NLOS) communication technique

Acampora teaches: wherein the communication data is effectuated pursuant to non line of sight (NOS) communication technique (col. 2 lines 21 to 25)

It would have been obvious to add the short range radio capability of Acampora to the nodes of the combination of Haas and Liu in order to allow communication without line of sight restrictions.

Referring to claim 31, the combination of Haas and Liu teach: the method of claim 28 and first tier nodes mesh and second tier nodes mesh and are configured to communicate.

Haas does not expressly call for: at least one first-tier node of said first-tier node and at least one second tier node of said second-tier mesh are co-located the at least one first-tier node co-located with the at least one second-tier node and at least the one second-tier node co-located with the at least first-tier

Acamora teaches: at least one first-tier node of said first-tier node and at least one second tier node of said second-tier mesh are co-located the at least one first-tier node co-located with the at least one second-tier node and at least the one second-tier node co-located with the at least first-tier (network in a home per col. 7 lines 61 or collocated)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add at least one first-tier node of said first-tier node and at least one second tier node of said second-

tier mesh are co-located the at least one first-tier node co-located with the at least one second-tier node and at least the one second-tier node co-located with the at least first-tier of Acampora to the first tier and second tier of Haas in order to build a system in a home or business.

Referring to claim 33, the combination of Haas and Liu teaches: the method of claim 28

The combination of Haas and Liu do not expressly call for: wherein the communication data is effectuated pursuant to non line of sight (NLOS) communication technique

Acampora teaches: wherein the communication data is effectuated pursuant to non line of sight (NLOS) communication technique (col. 2 lines 21 to 25)

It would have been obvious to add the short range radio capability of Acampora to the nodes of the combination of Haas and Liu in order to allow communication without line of sight restrictions.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 3, 4, 6, 11-17, 20-23, & 26-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to claims 1, 11, 15, 20, 22, 26, 27, 28, & 29; what is meant by "wherein the first-tier-mesh and the second-tier-mesh operate and communicate according to different mesh architectures based on at least one of a point-to-point mesh architecture, a preconfigured-mesh architecture and an ad-hoc-mesh architecture" It is unclear whether this means that the first-tier-mesh operates in one of a point-to-point mesh or preconfigured mesh architecture while the second-tier-mesh operates in a different combination of point-to-point or preconfigured mesh architecture.

Response to Amendment

6. Applicant's arguments with respect to claims 1, 3-17, & 20-33 have been considered but are moot in view of the new ground(s) of rejection.

The examiner provides the following in response to applicant's arguments in order to be

complete.

Relative to claims 1, 11, 15, 20, 22, 26, 27, 28, & 29; the examiner respectfully disagrees with the applicant's argument that Haas does not teach: wherein the first-tier-mesh and the second-tier-mesh operate and communicate according to different mesh architectures based on at least one of a point-to-point mesh architecture, a preconfigured-mesh architecture and an ad-hoc-mesh architecture

Haas teaches: wherein the first-tier and the second-tier mesh operate and communicate according to different mesh architectures based on at least one of a point-to-point mesh architecture, a pre-configured-mesh architecture and an-hoc-mesh architecture (The tier-1 network or first tier per Fig 3 is preconfigured so that a single node is the head and the other nodes talk to the head and the tier-2 network is preconfigured so that all of the nodes are cluster heads per Fig 3)

Relative to claim 5, the examiner respectfully disagrees with the applicant's argument that Haas does not teach: wherein the second tier mesh operates and communicates according to a mesh architecture that is based on at least one of a point to-point-mesh architecture and a pre-configured architecture

Haas teaches: wherein the second tier mesh operates and communicates according to a mesh architecture that is based on at least one of a point to-point-mesh architecture and a pre-configured architecture (The tier-2 network or second tier mesh is preconfigured so that all of the nodes are cluster heads per Fig 3)

Relative to claim 8, the examiner respectfully disagrees with the applicant's argument that Haas does not teach: wherein the first-tier-mesh operates and communicates according to at least one of a point-to-point mesh architecture and an ad-hoc-mesh architecture

Haas teaches: wherein the first –tier-mesh operates an communicates according to at least of a point-to-point-mesh architecture and an ad-hoc-mesh-architecture (ad-hoc per col. 8 line 38) Consequently, examiner finds applicant's argument's unpersuasive.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the

examiner should be directed to ROBERT W. WILSON whose telephone number is (571)272-

3075. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571/272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert W Wilson/
Primary Examiner, Art Unit 2419

RWW
2/4/09